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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/899,991	07/09/2001	Kim Hjortgaard Nielsen	Q65346	5169

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SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC
2100 Pennsylvania Avenue, NW
Washington, DC 20037-3213

EXAMINER

MCCHESENEY, ELIZABETH A

ART UNIT PAPER NUMBER

2644

DATE MAILED: 11/21/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/899,991

Applicant(s)

NIELSEN ET AL.

Examiner

Elizabeth A McChesney

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-41 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 19-41 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 July 2001 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5. 6) ☐ Other: ____

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show the messages or any distinguishing factor of figures 2-5 as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to because the specification page 2, lines 23-24, disclose the processor is preferably divided into a plurality of channels, however the drawing shows the filterbank divides the channels and the processor appears to combine the channels back into one channel to form the second electrical signal as referred to in claim 24 and in the specification page 2, lines 24-28. Clarification is required or a proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 19, 20, 21, 22, 23, 27, 28, 31 and 40** are rejected under 35 U.S.C. 102(b) as being anticipated by Fletcher et al. (US Patent No. 4,049,930).

Regarding **claim 19**, Fletcher et al. (hereinafter, "Fletcher") discloses an input transducer 10 for transforming an acoustic input into a first electrical signal (col. 19-20) and a hearing aid amplifier 12 which processes the first electrical signal to produce a second electrical signal based on the first wherein the second electrical signal is an amplified version of the first (col. 4-lines 21-24) and an output transducer 14 for converting the second signal into sound (col. 4-lines 24-26). Fletcher further discloses a detector 24, which performs like the probe in the claimed limitation in that it determines a signal parameter by comparing the reference and test signal and wherein the reference and test signal extends down through the circuit claimed (col. 4-lines 53-57). Fletcher further discloses a test gate system 26, which controls the state of the hearing aid wherein it receives an input from the detector 24, and generates the warning due to a defect (col. 4-lines 67-68 and col. 5-lines 1-5). Fletcher further discloses a trigger 28, which is activated during a test interval and reads on activation means as claimed (col. 5-line 1). (See Figure 1).

Regarding **claim 20**, Fletcher discloses everything claimed as applied above (see claim 19). Fletcher further discloses a timed switching circuit 20 wherein the microphone may be selectively interrupted from the amplifier and wherein an interruption reads on a disconnect for the signal path (col. 4-lines 30-32) while the

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switching circuit 20 in turn transmits a signal from the signal generator as the test signal for determination of any defect in the signal in comparison with the input signal.

Regarding **claim 21**, Fletcher discloses everything claimed as applied above (see claim 19). Fletcher further discloses signal generator 22 (col. 4-lines 46-60).

Regarding **claim 22**, Fletcher discloses everything claimed as applied above (see claim 19). Fletcher further discloses the detector 24 compares the reference and test signal wherein the test gate system 26 operates the trigger, which turns on the warning system when a defect has been established (col. 4-lines 53-67).

Regarding **claim 23**, Fletcher discloses everything claimed as applied above (see claim 21). Fletcher further discloses the signal generator 22 injects test signal at a second point wherein the test signal is compared with the reference signal and which will in turn effect the emission by the output transducer.

Regarding **claims 27 and 28**, Fletcher discloses everything claimed as applied above (see claim 21). Fletcher discloses the detector 24 compares the reference and test signal with respect to amplitude and frequency wherein the test gate system 26 “verifies” that if the gain (amplitude and frequency) differs in any way it operates the trigger, which turns on the warning system.

Regarding **claim 31**, Fletcher discloses everything claimed as applied above (see claim 19). Fletcher further discloses that the actual physical construction of the malfunction detection may take any practical form. Therefore activation means or malfunction detection may be constructed as a unit attached directly to the hearing aid

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housing with the possibility use of electrical connections and which reads on the claimed limitation (col. 8-lines 48-56).

Regarding **claim 40**, Fletcher et al. (hereinafter, "Fletcher") discloses an input transducer 10 for transforming an acoustic input into a first electrical signal (col. 19-20) and a hearing aid amplifier 12 which processes the first electrical signal to produce a second electrical signal based on the first wherein the second electrical signal is an amplified version of the first (col. 4-lines 21-24) and an output transducer 14 for converting the second signal into sound (col. 4-lines 24-26). Fletcher further discloses a detector 24, which performs like the probe in that it determines a signal parameter by comparing the reference and test signal and wherein the reference and test signal extends down through the circuit claimed (col. 4-lines 53-57). Fletcher further discloses signal generator 22 (col. 4-lines 46-60). Fletcher further discloses a test gate system 26, which controls the state of the hearing aid wherein it receives and input from the detector 24, and generates the warning due to a defect (col. 4-lines 67-68 and col. 5-lines 1-5). Fletcher further discloses a trigger 28, which is activated during a test interval and reads on activation means as claimed (col. 5-line 1). (See Figure 1).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 29, 32-39** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fletcher et al. (US Patent No. 4,049,930) in view of Lindemann et al. (US Patent No. 6,118,877).

Regarding **claim 29**, Fletcher fails to specifically disclose using compression in the claimed invention. Lindemann discloses that some hearing aids provide dynamic range compression and therefore it would have been obvious for one of ordinary skill in the art to use the compression ratio in view of the insertion gains in order to verify for a defect in the signal (col. 1-lines 42-53).

Regarding **claims 32-34**, Fletch discloses everything claimed as applied above (see claim 19). Fletcher fails to specifically disclose an activation means in which commands are received from a remote control device. Lindemann et al. (hereinafter, "Lindemann") discloses a hearing aid, which is comprised of a microphone 202, a signal processor 204 and an output transducer 212. Lindemann further discloses an input 208 that receives tones and noise for diagnostics tests from an external source not shown which could be an external test tone generator, audiometer, tape recorder, compact disk player or other sound source provided to the switch (col. 6-lines 64-col. 7-lines 1-4). It is well known that these devices have the option of inputting through a remote control and include devices such as programming or fitting devices. Therefore it would have been obvious for one of ordinary skill in the art to receive commands from any inputs listed above to provide inputs through devices such as remote control, programming or fitting devices in order to operate the hearing aid.

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Regarding **claim 35**, Lindemann further discloses a memory 220 for storing real world sound parameters (col. 6-lines 50-56).

Regarding **claim 36**, Lindemann further discloses a tone generator 214, which generates a tone and provides such a signal to the controller in the test tone generation mode, which is inherent that the tone would be generated in the test mode when there is a defect.

Regarding **claim 37**, Lindemann further discloses the tone generator coupled to the receiver produces tone for diagnostic tests and therefore it is inherent that this would alert to the user the information about the test for example, such as a defect.

Regarding **claim 38**, Fletcher fails to specifically disclose two switches. Lindemann discloses two switches 120 and 112, which reads on the claimed limitation that they are used for selective determination of parameters at respective points of the signal path (see figure 1).

Regarding **claim 39**, Lindemann shows in figure 1 where test signals can be selectively injected into either switch of the signal path through either for example the generic input 110 or the hearing rehabilitator 104.

7. **Claims 24, 25, 30 and 41** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fletcher et al. (US Patent No. 4,049,930) in view of Kaulberg (Pub. No. US 2002/0057814 A1).

Regarding **claim 24**, Fletcher discloses everything claimed as applied above (see claim 21). Fletcher fails to specifically point out or disclose the hearing aid

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comprising a filter bank with bandpass filters. However, the examiner maintains that filterbanks are well known in the art in order to divide channels to handle the different frequencies separately and accordingly. Kaulberg discloses a hearing aid wherein an input signal is transformed into a first electrical signal, then dividing the first electrical signal into a set of bandpass filtered first electrical signals, processing each of the bandpass filtered first electrical individually and adding the processed electrical signals into a second electrical signal into an acoustic output (see section [0017] and figure 2). It would have been obvious to one of ordinary skill in the art to divide the signal to process each frequency range individually.

Regarding **claim 25**, Kaulberg further discloses estimating acoustic feedback by generation of a third electrical signal by adaptive filtering of the bandpass filtered second electrical signals (see section [0017]) and therefore it would have been obvious to one of ordinary skill in the art to implement the filter design taught by Kaulberg in conjunction with Fletcher in order it to determine a defect in amplitude, frequency, tone or harmonic distortion, in the signal with reference to a test signal injected.

Regarding **claim 30**, Kaulberg further discloses a method comprising a hearing aid with an adaptive filter for compensation of acoustic feedback. Therefore it would have been obvious to one of ordinary skill in the art to use the method of Kaulberg for the purpose of avoiding undesired sounds such as howling, signal distortion, etc. which would contribute to a defect signal detected by Fletcher.

Regarding **claim 41**, Fletcher et al. (hereinafter, "Fletcher") discloses an input transducer 10 for transforming an acoustic input into a first electrical signal (col. 19-20)

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and a hearing aid amplifier 12 which processes the first electrical signal to produce a second electrical signal based on the first wherein the second electrical signal is an amplified version of the first (col. 4-lines 21-24) and an output transducer 14 for converting the second signal into sound (col. 4-lines 24-26). Fletcher further discloses a detector 24, which performs like the probe in that it determines a signal parameter by comparing the reference and test signal and wherein the reference and test signal extends down through the circuit claimed (col. 4-lines 53-57). Fletcher further discloses signal generator 22 (col. 4-lines 46-60). Fletcher further discloses a test gate system 26, which controls the state of the hearing aid wherein it receives and input from the detector 24, and generates the warning due to a defect (col. 4-lines 67-68 and col. 5-lines 1-5). Fletcher further discloses a trigger 28, which is activated during a test interval and reads on activation means as claimed (col. 5-line 1). (See Figure 1).

Fletcher fails to specifically point out or disclose the hearing aid comprising a filter bank with bandpass filters. However, the examiner maintains that filterbanks are well known in the art in order to divide channels to handle the different frequencies separately and accordingly. Kaulberg discloses a hearing aid wherein an input signal is transformed into a first electrical signal, then dividing the first electrical signal into a set of bandpass filtered first electrical signals, processing each of the bandpass filtered first electrical individually and adding the processed electrical signals into a second electrical signal into an acoustic output (see section [0017] and figure 2). It would have been obvious to one of ordinary skill in the art to divide the signal to process each frequency range

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individually for the purpose of eliminated unwanted noise that would contribute to the defect signal in the hearing aid.

8. **Claim 26** is rejected under 35 U.S.C. 103(a) as being unpatentable over Fletcher et al. (US Patent No. 4,049,930) in view of Lindemann et al. (US Patent No. 6,118,877) and in further view of Svajda et al. (Pub. No. US 2002/0039428 A1).

Regarding **claim 26**, neither Fletcher nor Lindemann specifically disclose using a telecoil as at least one of the transducers. However, the examiner maintains that this is well known in the art. Svajda et al. (hereinafter, "Svajda") discloses a conventional hearing aid can include both a microphone and a telecoil, wherein an the telecoil picks up a magnetic field so the person wearing the hearing aid can hear the speaker with out the common background audio noises that may occur in various noisy locations (see section [0006]). Therefore it would have been obvious for one of ordinary skill in the art to use a telecoil as well as a microphone in order to avoid some of the common background audio noises.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth A. McChesney whose telephone number is (703) 308-4563. The examiner can normally be reached Monday – Friday, 8:00 am – 4:30 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W. Isen can be reached on (703) 305-4386.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

Or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

EAM *EAM*
November 17, 2002

Forester W. Isen
FORESTER W. ISEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600



UNITED STATES DEPARTMENT OF COMMERCE
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